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STORAGE

Biological & Medical Serials

MAY, 1918.

ENTOMOLOGICAL NEWS

Vol. XXIX. No. 5.

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TORONTO BRANCH
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PHILADELPHIA:
THE ACADEMY OF NATURAL SCIENCES,
LOGAN SQUARE.

Entered at the Philadelphia Post-Office as Second-Class Matter.

ENTOMOLOGICAL NEWS

published monthly, **excepting August and September**, in charge of the Entomological Section of The Academy of Natural Sciences, Philadelphia, and The American Entomological Society.

ANNUAL SUBSCRIPTION, $2.00 IN ADVANCE.

SINGLE COPIES 24 CENTS.

Advertising Rates: Per inch, full width of page, single insertion, $1.00; a discount of ten per cent. on insertions of five months or over. No advertisement taken for less than $1.00—Cash in advance.

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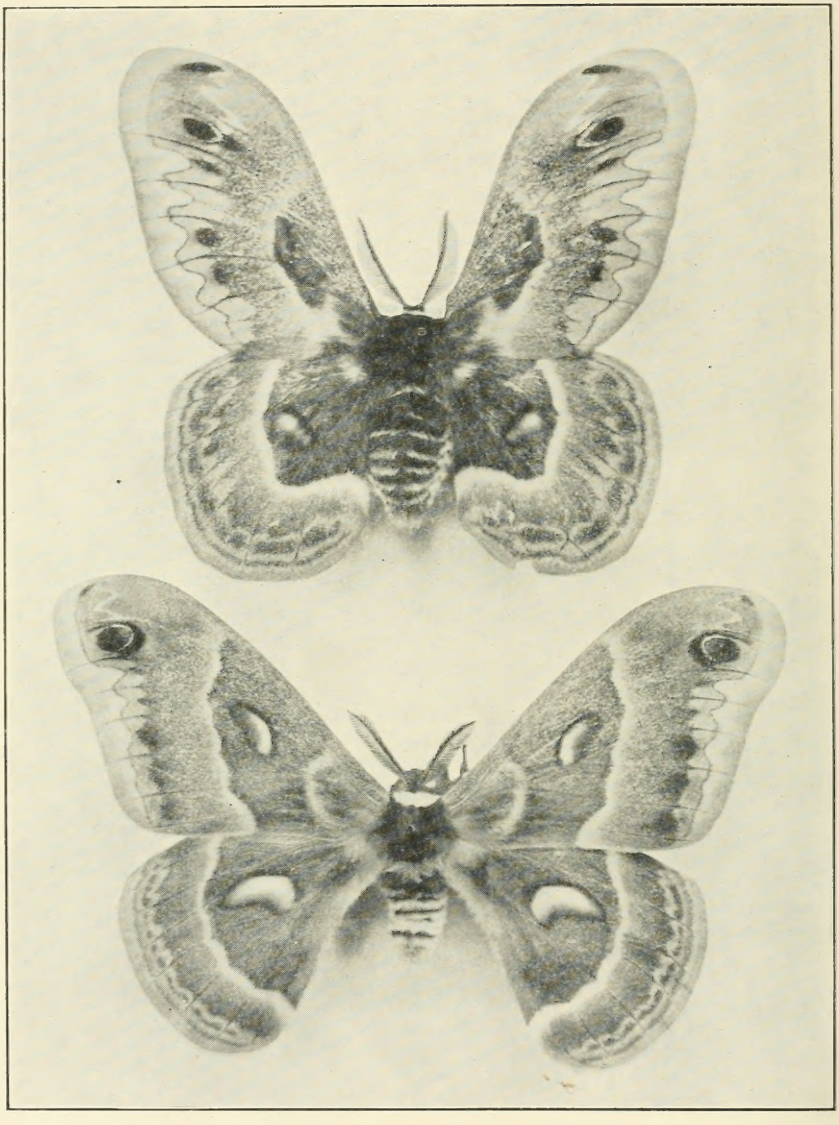

ABNORMAL AND NORMAL SAMIA CECROPIA.—LAURENT.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XXIX. MAY, 1918. No. 5.

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Notes on Variations and Abnormal Forms of Three Species of Saturniidae (Lep.).

By PHILIP LAURENT, Philadelphia, Pa.

(Plate IX.)

During the past forty years I have bred a few thousand specimens of *Callosamia promethea*, *Philosamia cynthia* and *Samia cecropia*, and have obtained many specimens differing from the normal forms. A specimen of *Callosamia promethea* in which the basal half of all four wings is blackish, the color of the male, and the outer half of the wings purplish red, as in the female, is one of the interesting variations. Two specimens of *Philosamia cynthia* have the ground color of the wings dark gray instead of drab-gray; while the white and lilac colored lines and markings are wanting. An oddity in the way of a five-winged *Samia cecropia*, with four perfect wings and

one imperfect, was secured a few years ago. This year (1917) there emerged in one of my cages an abnormal *Samia cecropia* differing from any specimen I have ever seen. The cocoon from which the moth was bred did not differ from any of the hundred or more other cocoons that I had, all of which were collected on the outskirts of Philadelphia. A description of this specimen is not necessary, as it is well figured in this number of the NEWS (Plate IX, upper figure).

Studies in the Tenebrionid Tribe Eleodiini No. 3 (Coleop.).

By F. E. BLAISDELL, SR., San Francisco, California.

Eleodes pimelioides Mann., var. **brevisetosa** n. var.

Oblong-ovate, very densely and rather finely sculptured, dull black, the legs dark nigro-piceous.

Head very densely and confluently punctate, punctures rather fine. Antennæ moderate in length.

Pronotum about one-fifth wider than long; disc moderately convex, rather finely and very densely punctate, punctures more or less confluent, the intervals being mere lines; sides more or less angulate at middle, thence evenly and moderately arcuate to apex, conversely oblique, convergent, straight or feebly sinuate to the basal constriction, the latter distinct and about one-seventh of the total length, with sides straight and parallel.

Elytra slightly oblong, two-sixths longer than wide, vertically declivous posteriorly; sides broadly, evenly and moderately arcuate; humeri obtuse and not in the least prominent; disk widest at the middle third, moderately convex on the dorsum, broadly and arcuately rounded at the sides; surface densely sculptured with tuberculiform granules, which are bright and shining at their summits, each bearing a short seta. On the central part of the disk the granules are less developed and more asperately punctate, the asperities are absolutely without an orderly arrangement. Otherwise as in *brunnipes*.

Measurements.—♂—Length, 11.0 mm.; width, 4.75 mm. ♀—Length, 12.0-15.0 mm.; width, 5.0-7.5 mm.

Types in my own collection. Collector F. W. Nunenmacher.

Habitat. Lassen County, California (type locality), May; Verdi, Nevada, April. 21 specimens studied.

In the male the first joint of the protarsi bears a moderate

tuft of golden pubescence at tip beneath; the second joint has a narrow transverse tuft. The basal joint of the mesotarsi bears a very small tuft which does not wholly interrupt the plantar groove.

The female referred to under *brunnipes* in my monograph of the Eleodiini (Bull. 63, U. S. Nat. Mus.), and which was collected at Verdi, Nevada, belongs here. It was doubtfully referred to *brunnipes* and did not agree with my specimen of that species which was collected at Buena Vista, Colorado.

Eleodes nunenmacheri n. sp.

Robust, subovate, densely sculptured and dull black. Elytra tuberculate throughout, body setigerous throughout.

Head rather small, less than one-half the width of the prothorax, very densely punctate, punctures rather small, subperforate, and more or less coalescent; intervals very narrow or more or less obsolete; feebly and broadly impressed along the line of the frontal suture. Antennae a little longer than the head and pronotum, moderate in stoutness, outer four joints moderately compressed, very feebly incrassate; third joint as long as the fourth and fifth taken together, fourth to the seventh inclusive subequal in length and obconic, eighth triangular, ninth and tenth about as long as wide, eleventh obovate.

Pronotum wider than long, widest just in front of the middle; sides broadly and evenly arcuate anteriorly, oblique and converging posteriorly, and just noticeably arcuate to straight—not reëntrant, constricted in basal twelfth, sides of the constriction straight and parallel, sinuate only at the junction of the obliquely directed sides and the constriction, arcuately subangulate at middle; disk evenly and moderately convex, densely punctate, punctures moderate, subperforate, more or less coalescent and minutely setigerous, intervals very narrow to subobsolete, with scattered small smooth areas as if a puncture was now and then obsolete; apex very feebly sinuate and not beaded; base subequal to the apex, transverse and not beaded; apical angles obtusely and narrowly rounded; basal angles rectangular and not prominent.

Propleura opaque, densely and finely punctate, punctures minutely setigerous; surface rugulose at the acetabula.

Elytra slightly longer than wide, quadrato-ovate, widest in middle third; base truncate, slightly wider than the contiguous prothoracic base; humeri subangulate and not prominent; disk moderately convex on the dorsum, broadly and arcuately rounded laterally, arcuately and abruptly declivous posteriorly; surface strongly tuberculate

throughout, tubercles moderate in size, nearly simple, bearing small setae, laterally and on the apical declivity more distinctly muricate, setae longer, feebly reclinate, more strongly so at the extreme periphery, with minute tubercles scattered between the larger ones, all smooth and more or less shining, general surface minutely reticulate.

Epipleura very sparsely muricato-tuberculate, gradually narrowing from base to apex; surface minutely reticulate.

Sterna finely and densely punctate.

Parapleura finely and less densely punctate.

Abdomen smooth and shining, rather densely punctate, first segments distinctly so, fifth finely and moderately densely punctate.

Legs moderate in length and stoutness.

♂.—Less robust, somewhat narrower. Abdomen rather less than moderately convex, impressed at middle of the first two segments, slightly oblique to the sterna. First two joints of the protarsi clothed with a tuft of golden pubescence at tips beneath. First joint of the mesotarsi without tufts.

♀.—Robust. Abdomen quite strongly convex. First joint of the protarsi distinctly thickened at apex beneath and evidently clothed with coarse short setae; second joint with a narrow transverse tuft which is cleft at middle, plantar groove distinct basally, but obsolete on the first joint which is convex beneath.

Measurements.—♂—Length, 9.5-11.0 mm.; width, 4.5-5.0 mm. ♀—length, 12.5 mm.; width, 6.5 mm.

Habitat.—Klamath and Lake counties, Oregon; Lassen and Modoc Counties, California. 17 specimens studied.

Types ♂ and ♀ in my own collection; type locality, Klamath County, Oregon. F. W. Nunenmacher, collector.

The males have the prothorax rather more strongly constricted before the base, but the sides in all instances are straight or feebly arcuate between the middle and the constriction and not re-entrant, as in *cordata* and *pimelioides*. The prothorax appears relatively wider as a result.

Nunenmacheri differs from *pimelioides* in the shape of the pronotum and in its denser punctuation; the tuberculation of the elytra is also more regular and less muricate. It should follow *pimelioides* and its races in our lists.

Eleodes nunenmacheri, var. **verrucula** n. var.

Form as in *nunenmacheri*. Punctuation of the pronotal disk slightly finer. In the female the form of the pronotum is the same as in *nunenmacheri*, while in the male the basal constriction is more ab-

ruptly formed; as a result the sides behind the middle are somewhat more strongly convergent and straighter, and the sides of the constricted portion are straight and parallel. The basal angles are rectangular.

The elytral disk centrally and along the suture is somewhat subobsoletely tuberculo-rugulose, peripherally muricato-tuberculate, the tubercles being more reclinate than in *nunenmacheri*, their summits are bright and shining and about one-half as large as in the typical race; very small tubercles are scattered between the larger ones. The general surface is microscopically granulato-reticulate. Laterally the tubercles are setigerous, the setae are reclinate and in length about equal to the height of the tubercles; on the central part of the disk the setae are more hair-like.

The inter-coxal process of the prosternum is not mucronate in the specimens at hand.

♂.—Abdomen oblique to the sterna, rather feebly convex and quite strongly impressed on the first two segments. The basal two joints of the protarsi bear tufts of golden pubescence at tips beneath; basal joint of the mesotarsi bears a small transverse tuft.

♀.—As in *nunenmacheri*.

Frequently the apical tarsal tufts are piceo-fuscous, but usually become golden yellow after immersion in chloroform.

Measurements.—♂—Length, 9.5-11.0 mm.; width, 4.5-5.0 mm. ♀—Length, 12.5 mm.; width, 6.5 mm.

Habitat.—Lake and Klamath Counties, Oregon; Lassen and Modoc Counties, California; 78 specimens studied.

Types ♂ and ♀ in my own collection; type locality, Lake County, Oregon. F. W. Nunenmacher, collector. The specimens were collected in May.

Eleodes propinqua n. sp.

Ovate, twice as long as wide, distinctly pubescent throughout, densely sculptured; elytra moderately scabrous.

Head rather finely and densely punctate, feebly convex. Antennae extending a short distance beyond the base of the pronotum, slightly compressed and feebly dilated in the outer three joints, scarcely incrassate; third joint just the least longer than the combined lengths of the fourth and fifth, fourth to the seventh joints inclusive subequal in length and width, eighth triangularly obconical, ninth triangulo-oval, tenth slightly wider than long, the eleventh short obovate.

Pronotum slightly wider than long, widest just in advance of the middle; disk moderately convex, more strongly so in the lateral thirds, closely and not finely punctate, intervals narrow, feebly convex but not rugose, somewhat scabrous laterally; base and apex subtruncate,

scarcely margined; sides subangulate, more or less feebly arcuate and convergent before the middle to apex, somewhat oblique, straight or feebly arcuate to the marked constriction posteriorly, the latter about or less than one-sixth of the total pronotal length; apical angles obtuse; basal angles rectangular.

Propleura rather densely punctato-rugose and submuricate.

Elytra oval, about one-fourth longer than wide, widest at middle third; base truncate, distinctly wider than the contiguous pronotal base; humeri obtuse and not in the least prominent; sides evenly arcuate, apex not broadly rounded; disk moderately convex on the dorsum, evenly and broadly arcuate laterally and vertically declivous posteriorly; surface densely sculptured, punctato-scabrous centrally about the suture, tuberculate laterally, tubercles rather small, somewhat muricate, more strongly so on the apical declivity, each tubercle or puncture with a *moderately long semi-erect hair.*

Epipleura subscabrous and not strongly defined from the elytral disk.

Sterna and *parapleura* shining and densely punctate.

Abdomen glabrous and shining, more or less densely punctate, especially on the first segment and basally on the others.

Legs moderate and rather slender. Anterior tarsi dissimilar in the sexes.

♂.—Somewhat narrow. Abdomen feebly oblique to the sterna and impressed at middle of the first two segments. Protarsi with the first two joints scarcely thickened at tips beneath, each with a tuft of pubescence, tufts piceo-flavous, that of the first joint rather broadly truncate, that of the second transverse and subtruncate; first joint of the mesotarsi with a small rounded and truncate tuft at tip beneath.

♀.—Broader and ovate. Abdomen horizontal. First joint of the protarsi somewhat thickened at tip, with the apico-marginal tufts of spinules contiguous at the median plane and blocking the plantar groove.

♂.—Length, 9.5-10.5 mm.; width, 4.5-5.0 mm. ♀.—Length, 10.0-12.0 mm.; width, 5.0-6.5 mm.

Habitat.—Modoc County, California. Collected May 15, 1913, by F. W. Nunenmacher; 52 specimens studied.

Types ♂ and ♀ in my own collection; type locality, Modoc County, California.

In a single female the joints of the protarsi are wholly denuded of spinules. The plantar grooves are not defined on the first four joints, which are evenly and smoothly convex from side to side, the first is subhemispherically promi-

nent in the apical two-thirds; the fifth joint is alone margined beneath.

Propinqua is related to *caseyi*, from which it differs in its coarser sculpturing, more strongly sinuate sides of the pronotum and many other details which can be determined by comparison of the two descriptions. The elytra are noticeably pubescent.

Eleodes brevisetosa, nunenmacheri, verrucula and *propinqua* belong to the subgenus *Blapylis*.

Eleodes hispilabris Say, var. **imitabilis** n. var.

Syn. *E. hispilabris forma laevis.*

In order to express the relationships of the races of *hispilabris* properly, it becomes necessary to consider the smooth form (*forma laevis*) as a race instead of a *forma*. The original diagnosis given in my Monograph of the Eleodiini is as follows:

Robust, integuments decidedly black, thick and alutaceous, also quite smooth. Thorax rather large. Elytra usually evenly convex from side to side, sulci very shallow and subobsoletely punctured; intervals very feebly convex and with a single row of widely spaced punctures, that become minutely but distinctly muricate laterally and on the apical declivity. Legs somewhat slender.

Measurements.—♂—Length, 23.0 mm.; width, 8.0 mm. ♀—Length, 23.0-26.0 mm.; width, 9.2-10.0 mm.

Habitat.—Utah (Salt Lake, June, Coll. Hubbard and Schwarz); Oregon (The Dalles); State of Washington (Walla Walla, Coll. Chas. Fuch and F. E. Blaisdell).

Types in my own collection; type locality, The Dalles, Oregon.

While there are very close resemblances between the two sexes as to general form, a difference is obvious. The males are slightly narrower and the abdomen less convex. *E. hispilabris forma elongata* of the Monograph (Bull. 63, U. S. Nat. Mus.) is a variation of *imitabilis* and not of the type-species. Its relationship may be expressed as follows:

E. hispilabris, var. **imitabilis,** forma **elongata.**

The essential diagnostic characters are as follows:—General form distinctly elongate and narrower as compared with the typical race.

Integuments thick, dull black and alutaceous. Elytra sulcate, but less so than in *E. hispilabris* var. *sculptilis*, and slightly more so than in *imitabilis*. The elytral intervals are more or less feebly convex. The prothorax is noticeably larger and the legs stouter. The general form is the same in both sexes,—the female is depressed on the dorsum as in the male and the elytra are but slightly wider than those of the male. There is here less sexual differentiation, as has already been mentioned in connection with other species or races, as *E. (Blapylis) neotomae* for instance.

Eleodes hispilabris Say, var. **attenuata** n. var.

Elongate, subfusiform, shining, black; elytra more or less slightly sulcate, moderately convex; integuments weak.

Head finely and sparsely punctate, punctures coarsest on the epistoma and finest on the vertex. Antennae long and as in *hispilabris*.

Pronotum widest at about the middle; disk smooth and more or less alutaceous, moderately convex, finely, very sparsely and irregularly punctured, narrowly granulate and opaque along the marginal bead; apex slightly narrower than the base, feebly emarginate and obsoletely beaded; sides evenly and broadly arcuate, becoming slightly sinuate before the basal angles, which are subrectangular, distinct but not in the least prominent, marginal bead more or less strong; base feebly beaded and feebly arcuate; apical angles subacute and not dentiform to moderately dentiform, not or feebly everted.

Propleura smooth, subopaque, finely punctulate, and more or less feebly rugulose.

Elytra ovato-fusiform, about twice as long as wide, widest at the middle; base very feebly emarginate and just the least wider than the contiguous base of the pronotum; humeri minutely dentiform; sides evenly arcuate, feebly and broadly sinuate before the apex, the latter subacute, slightly dehiscent and the suture impressed; disk feebly convex on the dorsum, broadly and rather evenly rounded laterally, gradually and arcuately declivous posteriorly; surface more or less sulcate; sulci shallow and with a single row of small, very closely placed punctures, intervals feebly to moderately convex and with a single row of widely spaced punctures. The deflexed sides are more coarsely, irregularly punctate, subsulcate and more or less asperate.

Sterna and *parapleura* more or less finely punctate.

Abdomen more or less glabrous, finely and sparsely punctate, punctures denser and rugulose on the first segment.

Legs slender; profemora armed. Tarsi grooved and similar in the sexes.

♂.—Slender, fusiform. Elytral apex more attenuate and the disk more gradually declivous on the dorsum. Abdomen horizontal and feebly convex.

♀.—Less elongate, broader. Abdomen more strongly convex.

Measurements.—♂—Length, 20.5-23.0 mm.; width, 6.0-6.5 mm. ♀—Length, 20.0-24.0 mm.; width, 6.2-7.0 mm.

Habitat.—Nogales, Santa Cruz County, Arizona, August and September, 1906. Eleven specimens studied. Collected by F. W. Nunenmacher.

Types in my own collection; type locality, Nogales, Arizona.

Attenuata can be recognized by its smoother sculpturing, more attenuate and fusiform body.

Some Bees of the Genus Panurginus (Hym.).

By T. D. A. Cockerell, Boulder, Colorado.

It is a remarkable thing that the northern genus *Panurginus* has penetrated to Southern South America; while *Perdita,* so rich in species in our southwest, appears to be wholly absent from the South American desert regions.

Panurginus callurus sp. n.

♀.—Length nearly 5 mm., with broad abdomen; head and thorax black, abdomen clear orange-ferruginous, without hair-bands; flagellum short, bright ferruginous beneath, darker above; mandibles bright ferruginous, with the apex broadly black; hair of head and thorax whitish, scanty, abundant on postscutellum; facial quadrangle much broader than long; head and thorax shining and finely punctured, the mesothorax and scutellum polished; eyes gray; tegulae light rufo-testaceous; wings hyaline, nervures and stigma testaceous; b. n. falling far short of t. m.; base of metathorax with irregular plicae, and the surface microscopically reticulate; legs ferruginous, the anterior femora dusky; scopa of hind tibiae loose, of simple curved hairs, which are microscopically annulate; hind basitarsus about as long as the other joints together, and much broader; claws cleft; abdomen with very little hair except at apex. The stigma is smaller than in *P. vagabundus.*

Carcarana, Argentina (*L. Bruner* 76). United States National Museum. Easily known by the red abdomen. *P. rufiventris* Friese has also a red abdomen, but the head and thorax are dark blue. It is from Mexico.

Panurginus vagabundus sp. n.

♂.—Length about 5 mm., anterior wing 4; black, the hind margins of the abdominal segments rather obscurely castaneous; pubescence scanty, whitish; eyes slaty black; clypeus pale lemon yellow with two dark

dots, the surface rugoso-punctate, not polished; mandibles rufescent; labrum black, polished and shining; facial quadrangle about as broad as long; flagellum bright ferruginous beneath, reaching as far as base of wings; mesothorax and scutellum shining, finely punctured; base of metathorax rugulose, dull, with feeble plicae; tubercles faintly reddish or wholly black; tegulae rufotestaceous; wings hyaline, very faintly dusky apically; nervures and the large stigma ferruginous; b. n. falling a little short of t. m.; knees pale yellowish; anterior tibiae in front, and their tarsi, light reddish; the other tarsi whitish on outer side and light ferruginous on inner; abdomen shining, finely punctured, without hair-bands. Claws cleft; hairs on hind tibiae delicately plumose.

Carcarana, Argentina (*L. Bruner*, 40 and 72.) United States National Museum. This is separated from its nearest relatives as follows, the table based on males:

Legs black .....1.
Legs partly yellow or pale reddish .....2.
1. Clypeus yellow .....*saltensis* Friese.
Clypeus white .....*aeneiventris* Friese.
2. Tubercles yellow, wings dark .....*steinbachi* Friese.
Tubercles not yellow, wings clear .....*vagabundus* Ckll.

In Meadow Valley, northern Mexico, Prof. C. H. T. Townsend took three species of *Panurginus*. One is the Rocky Mountain *P. bakeri* Ckll., while the other two are new.

Panurginus nitescens sp. n.

♀.—Length a little over 7 mm.; shining black, with scanty pale hair; eyes obscure green; clypeus polished, with large distinctly separated punctures, and a faintly indicated median groove; antennae black; an impunctate area on each side of the ocelli; mesothorax polished, with distinct but widely scattered punctures; area of metathorax rugosoplicate, with a prominent smooth shining rim; tegulae dark, with a large reddish spot; wings clear, nervures and stigma dull rather pale reddish; legs black, with pale hair; spurs ferruginous; abdomen shining, hind margins of segments 2 to 4 broadly reddish.

Meadow Valley, Mexico (*Townsend*). United States National Museum. This species is best distinguished by comparison with several others which it greatly resembles, as follows:

Middle of flagellum bright rufous beneath; wings brownish,
perlaevis Ckll.
Flagellum not thus marked; wings clear, or (*pierceі*) slightly dusky..1.

1. Second s. m. narrowed fully half above, first r. n. joining second s. m. much more than twice as far from base as second r. n. from apex; mesothorax very smooth, without conspicuous punctures, *piercei* Crawf.

Second s. m. not thus narrowed above, first r. n. joining second s. m. nearer base (especially in *innuptus*); mesothorax distinctly punctured ..... 2.

2. Area of metathorax without a shiny rim; tegulae testaceous, *innuptus* Ckll.

Area of metathorax with a shiny rim; tegulae reddish fuscous, *nitescens* Ckll.

Panurginus planatus sp. n.

♂.—Length about 6 mm.; slender, black; quadrate spot on labrum, large spot at bast of mandibles, clypeus entirely, lateral face-marks (pointed above at an angle of about 50 deg.), a lobe on inner side of lateral marks (representing part of dog-ear marks) and lower part of supraclypeal area (pointed above), all pale yellow; the yellow patch on labrum is the process, which is broadly truncate, slightly emarginate, with a submarginal row of black spots; pubescence scanty and pale; antennae long, black; mesothorax polished, with strong punctures; area of metathorax with strong plicae, more or less branching, but without a shining rim; knees broadly, tibiae at apex, anterior tibiae in front, and the basitarsi, light yellow; tegulae rufopiceous; wings dusky, nervures and stigma fuscous; abdomen shining, sixth ventral segment with a large median depression.

Meadow Valley, Mexico, September (*Townsend.*) United States National Museum. Related to *P. concinnus* Fox, but especially to *P. rudbeckiae* Rob. The three are separated thus:

Flagellum pale testaceous beneath..*concinnus* Fox (Lower California).
Flagellum dark ..... 1.

1. Clypeus with a strong median sulcus ..*rudbeckiae* Rob. (Illinois).
Clypeus without such a sulcus .....*planatus* Ckll.

Membership in the Association of Economic Biologists.

EDITOR, ENTOMOLOGICAL NEWS: I beg to inform you that at a recent meeting of the Council of this Association it was decided to cancel the rule limiting its membership to those of British nationality. As foreign members will, therefore, have the same privileges as British ones, including the right to receive the *Annals of Applied Biology* for the annual subscription of £1. 1. 0. (which is sold to the public at 25 sh.), the fact may possibly be of some interest to readers of your journal.—S. A. NEAVE, *Honorary Secretary,* 89, Queen's Gate, London, S. W. 7.

New Species of Lopidea from Arizona (Hemip. Miridae).*

By Harry H. Knight, Ithaca, New York.

(Plate X.)

The writer did considerable collecting in Arizona, while with the Cornell Biological Expedition, and in the present paper gives the results of his studies on the species of *Lopidea* taken in that region. This interesting genus presents a number of species having great similarity of coloration and general form but with very distinct genital structures, characters which must be used if we are to determine the species consistently.

Lopidea arizonae new species (Plate X, Fig. 1).

Suggestive of *marginata* but much larger and with bright red on the basal half of the pronotum; genital claspers distinctive of the species.

♂. Length 7 mm., width 2.3 mm. Head white, the sutures, sides of tylus, heavy bar each side of the median line of the front and the base of the head black; rostrum blackish with pale on the first segment, eyes brownish to black; antennae black, second segment linear. Pronotum with the basal half bright red, shining, narrow basal margin fuscous, anterior margin white, calli black. Scutellum fuscous, pale median stripe on the apical half. Hemelytra dark red shaded with fuscous, more red bordering the embolium and on the inner half of the cuneus; embolium and outer margin of the cuneus ivory white; fine pale pubescence with short black bristles on the white embolium; membrane fuscous. Coxae and femora more or less pale and marked with fuscous and black; femora fuscous on the front margin with a row of black dots beneath and usually two rows on the upper side, tibiae and tarsi black. Venter marked transversely with alternating bands of fuscous, reddish and pale.

♀. Very similar to the male in coloration, only more robust, the pale color more extended on the venter.

This species was taken by the writer on *Robinia neomexicana* in Post Creek canyon near Bonita, Arizona. It occurs apparently in several mountain ranges of Arizona at altitudes of 6000 to 7500 feet.

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*Contribution from the Department of Entomology of Cornell University.

Holotype—♂, July 16, 1917, near Bonita, Arizona (H. H. Knight); Cornell University Collection.

Allotype—Taken with the type.

Paratypes—3 ♂, 22 ♀, topotypic; 2 ♂, 1 ♀, July 27, Sabino Canyon, altitude 7800 feet, Mt. Lemon, Santa Catalina Mountains, Arizona (H. H. Knight). ♂ ♀, July 29, Huachuca Mountains, Arizona (H. G. Barber). 14 ♂ ♀, Arizona (H. K. Morrison, 1883, Cornell Collection). ♂, June 15, Jemez Springs, New Mexico (Woodgate).

Lopidea apache new species (Plate X, Fig. 2).

Very similar in general appearance to *arizona* but differs in having the anterior margin of the pronotum more reddish and the basal half of the disk more fuscous; male more reddish, including the embolium and cuneus.

♂. Length 6.8 mm., width 2.1 mm. Head nearly as in *arizona* but with the black on the tylus and front more extended. Pronotum deep dull red, calli black, the disk somewhat darkened with fuscous. Hemelytra as in *arizona*, but all white of the embolium, cuneus and scutellum replaced by red. Legs more fuscous and sides of the venter with more red than in *arizona;* genital claspers distinctive of the species (fig. 2).

♀. Length 7.2 mm., width 2.3 mm. Hemelytra with more fuscous than red, embolium and outer half of the cuneus pale, inner half of the cuneus red; disk of the pronotum having the red darkened with fuscous, anterior margin more pale with reddish.

This species was taken in company with *arizonae* on *Robinia neomexicana* and at the time was thought to be the same species. It is possible that *apache* was merely attracted to the plant to feed on the flowers and does not breed there.

Holotype—♂, July 16, 1917, near Bonita, Arizona (H. H. Knight); Cornell University Collection.

Allotype—Taken with the type.

Paratypes—6 ♂, 31 ♀, taken with the types.

Lopidea navajo new species (Plate X, Fig. 3).

Very similar to *apache* but slightly smaller, darker colored and with less red; male genital claspers distinctive of the species.

♂. Length 6.5 mm., width 1.9 mm. Head marked nearly as in *arizona*, but the pale areas more yellowish. Pronotum with the disk more fuscous than reddish, the anterior margin pale yellowish and not conspicuously white as in *arizona*. Scutellum and hemelytra mostly dark fuscous as in *apache*, but the embolium and more than half of the white, claval suture margined with pale. Legs and venter nearly as in *arizona*.

♀. Very similar to the male in coloration and only slightly more robust.

This species was found breeding abundantly on *Robinia neomexicana* near Williams, Arizona. The writer has never seen any species of *Lopidea* so abundant as was this one on the trees of *R. neomexicana* around the camping grounds set aside in the forest preserve two miles west of Williams. Nymphs as well as adults were taken clustered on the tender flower shoots where they preferred to feed. Strangely enough *L. arizonae* was not taken here though the botanists determined the trees as identical with those from which *arizonae* was taken at Bonita.

Holotype—♂, August 4, 1917, Williams, Arizona (H. H. Knight); Cornell University Collection.

Allotype—Taken with the type.

Paratypes—Numerous specimens taken with the types.

Lopidea lateralis new species (Plate X, Fig. 4).

♂. Length 5.9 mm., width 2 mm. Black, the embolium and outer half of the cuneus ivory white. Pronotum with the side margins of the disk strongly margined, narrowly pale; basal angles of the disk and posterior half of the sides orange red; extreme base of the corium and the articulations brownish to orange. Second antennal segment slightly thicker at the base, tapering gradually to the apex; genital claspers (fig. 4) distinctive of the species.

♀. Length 6 mm., width 2 mm. Very similar to the male in coloration. A few females have the membrane much abbreviated, abruptly rounded and scarcely reaching over the tip of the venter (length 4.7 mm., width 2 mm.).

This species was swept from a wild raspberry (*Rubus* sp.) and a few from flowering herbaceous plants growing on the slopes of Mt. Lemon at an altitude of 7800 feet.

Holotype—♂, July 27, 1917, Sabino Canyon, altitude 7800

feet, Mt. Lemon, Santa Catalina Mountains, Arizona (H. H. Knight); Cornell University Collection.

Allotype—Taken with the type.

Paratypes—26 ♂, 17 ♀, topotypic; ♂, August 4, Williams, Arizona (H. H. Knight). 3 ♂, 1 ♀, Arizona (H. K. Morrison, 1883, Cornell Collection).

Lopidea garryae new species (Plate X, Fig. 5).

A small fuscous form having some of the color characters of *nigridea* but differs in several respects; genital claspers distinctive of the species.

♂. Length 5.1 mm., width 1.5 mm. Fuscous, the head and antennae black, legs fuscous to blackish; bordering the front of the eyes, sometimes the sides of the face, sides and front margin of the pronotum, dull pale yellowish. Hemelytra and scutellum fuscous, embolium and frequently the base of the clavus and corium pale yellowish to reddish brown; cuneus reddish, membrane fuscous. Venter fuscous with reddish on the sides.

♀. Length 5 mm., width 1.6 mm. Very similar to the male, the embolium paler with the head and venter more blackish.

This species was found breeding on *Garrya wrightii* in Post Creek Canyon, altitude 7000 feet, near Bonita, Arizona.

Holotype—♂, July 16, 1917, near Bonita, Arizona (H. H. Knight); Cornell University Collection.

Allotype—Taken with the type.

Paratypes—5 ♂, 2 ♀, taken with the types.

Lopidea lepidii new species (Plate X, Fig. 6).

Very similar to *media* in size and coloration but differing distinctly in the structure of the male genital claspers.

♂. Length 5.2 mm., width 1.7 mm. Head and antennae black, juga, lorae, genae and bordering the eyes yellowish to reddish; second antennal segment nearly linear. Thorax, hemelytra and venter bright red, with the calli, scutellum, sternum, apical half of the clavus and inner half of the corium darkened with fuscous. Legs dark fuscous to blackish; genital claspers (fig. 6) distinctive of the species.

♀. Length 5.6 mm., width 1.9 mm. Slightly more robust than the male, the red color more of an orange. This species has very rarely if ever the white embolium so frequent in *media*.

Holotype—♂, July 17, 1917, near Bonita, Arizona (H. H. Knight); Cornell University Collection.

Allotype—Taken with the type.

Paratypes—Numerous specimens taken with the types. 14 ♂ ♀, Arizona (H. K. Morrison, 1883, Cornell Collection). ♂, July 13, Palmer Lake; 3 ♂, July 31, Ridgway; ♂, June 10, Fort Lupton, Colorado.

The writer found the species breeding on *Lepidium thurberi* which was growing around the adobe ruins of old Fort Graham, near Bonita, Arizona. A short distance away was found an extensive growth of the same plant as determined by the botanists on the expedition, which was abundantly infested by *Lygus elisus* V. D., but no specimens of *Lopidea lepidii* were to be found. It would seem from this that the species breeds only in favored spots.

The writer has seen specimens of both *media* and *lepidii* from Colorado where the species appear to overlap. In the eastern States there is only one species that could be taken for *media* Say, it having the inner hook on the right clasper very long and more slender than in *lepidii*, the same clasper having also near the tip a distinct dorsal projection with five or six serrate teeth at the top.

Lopidea minima new species (Plate X, Fig. 7).

Very small, reddish with fuscous and black, resembling *media* in coloration; genital claspers distinctive of the species.

♂. Length 3.8 mm., width 1.4 mm. Black, the basal half of the pronotum orange to red; hemelytra red, bordering the commissure, membrane and scutellum, fuscous.

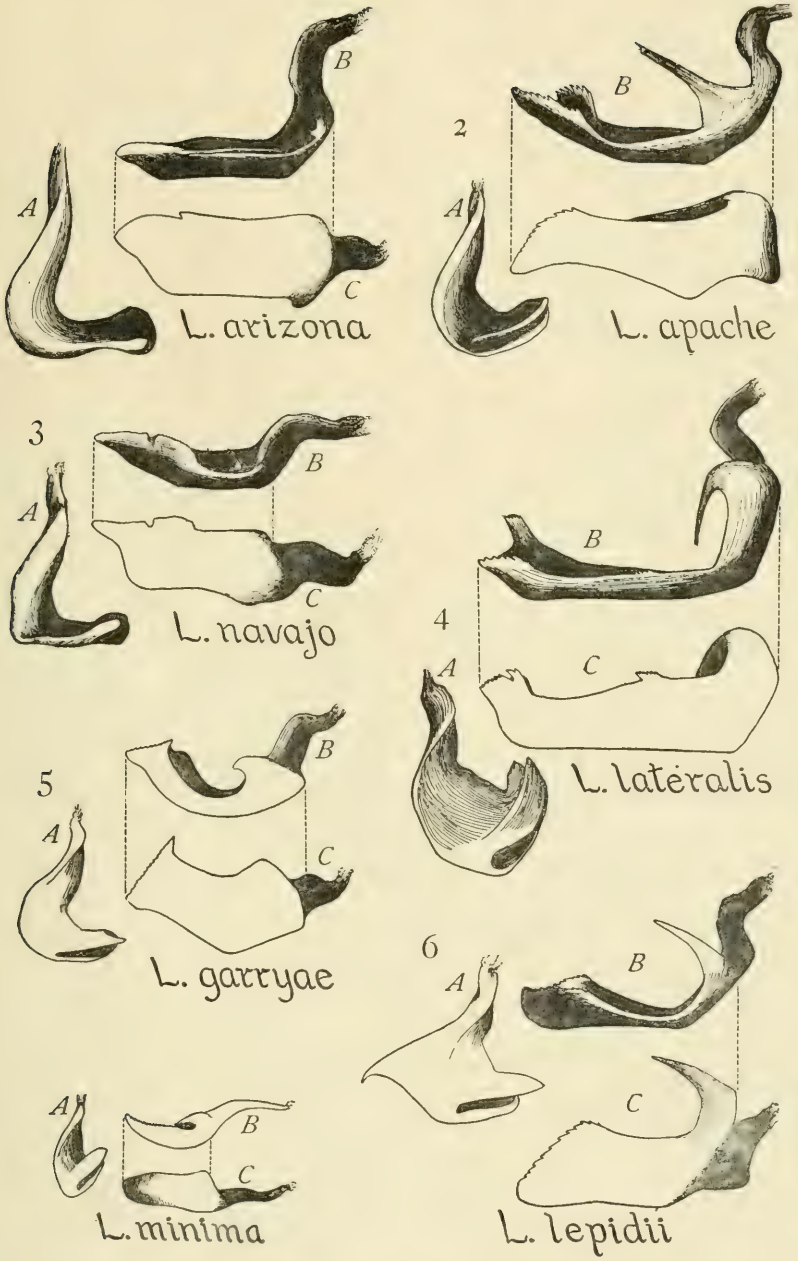
Holotype—♂, July 23, 1917, Sabino Canyon, altitude 5500 feet, Santa Catalina Mountains, Arizona (H. H. Knight); Cornell University Collection.

Paratypes—♂, topotypic. 2 ♂, Arizona (H. K. Morrison, 1883, Cornell Collection).

The writer took the species on *Coursetia microphylla* which is probably the food plant. At that date the species was not in season, the two specimens taken probably being stragglers of the brood.

Explanation of Plate X.

Male genital claspers of *Lopidea*. *A*, left clasper, dorsal aspect. *B*, right clasper, dorsal aspect. *C*, right clasper, posterior aspect.



NEW LOPIDEAE FROM ARIZONA.—KNIGHT.

A New Muscoid Genus from the Chiricahua Mountains, Arizona (Dip.).

By Charles H. T. Townsend, U. S. Bureau of Entomology, Washington, D. C.

On August 4, 1917, while seeking shelter in a shallow cave under overhanging rock walls of South Fork Cave Creek, Chiricahua Mts., Arizona, at an altitude of about 5500 feet, the writer found a single female of a very remarkable fly resting on the roof of a pocket at one end of the cave. Diligent search made subsequently in similar situations failed to disclose additional specimens. The reproductive system was extracted and proves the fly to belong to one of the Calirrhoid groups, as indicated by the external head characters.

CHIRICAHUIA new genus.

Head in profile nearly twice as high as its length, in front view almost as wide as its height. Eyes proportionately small, thinly but distinctly hairy, extending about as low as tips of antennae or about two-thirds' way to vibrissae. Lower profile of head rounded, bulged downward. Vibrissal axis equal to antennal axis. Clypeus broad, rather elongate-oval in outline, widened below, in nearly same plane throughout, feebly carinate on upper half. Epistoma in front view very short and restricted, in same plane with clypeus, not produced, about level with vibrissae. Facialia widely separated, only slightly curved inward below, with sparse downwardly-directed bristles on lowest third, the vibrissae widely separated and a little longer than the bristles below them. Proboscis very short, less than one-third head-height. Palpi reaching nearly to end of proboscis, moderately stout, subcylindrical. Antennae inserted far above eye-middle, extending scarcely over half way to oral margin, second joint but little elongate, third joint about two and one-half times length of second and of even width. Arista bare, basal joints short, inserted nearly half way down third antennal joint. Front very broad, taking up nearly half the head-width at vertex, widening anteriorly, scarcely as long as its average width. Parafrontalia averaging somewhat broader than frontalia, narrowing posteriorly. Frontal bristles descending to base of third antennal joint. Outer vertical well devel-

oped, directed strongly outward and a little forward. Three proclinate fronto-orbitals, the hind one directed more outward and representing the ordinary reclinate pair, a very small one between the front two and some microchaetae outside. Frontalia extended into narrow divergent prongs behind, the ocellar area occupying half their length. Ocellars present, proclinate. Parafacialia rather broad, averaging about one-third width of clypeus, with row of downwardly-directed bristles along front edge, this row paralleled on lower half by a short row behind it near lower end of eye. Cheeks almost as wide as eye-length, nearly as wide as vibrissal axis. Occiput broadly bulged behind eyes. Occiput and cheeks sparsely clothed with short bristles.

Two sternopleurals, three postsuturals. Four marginal pairs of scutellars, the apical pair slightly longest. No costal spine, third vein bristled about half its length, other veins bare. Apical cell narrow, attenuate on distal third, open, ending in wing-tip, the fourth vein only gently sinuate, the third vein curved strongly backward distally. Hind crossvein straight, nearer to small crossvein than to cubitus. Tegulae smaller than average. Legs short, front tarsi but little wider than others.

Abdomen of four segments, the last two segments a little longer than the first two; without macrochaetae, with only bristly hairs which are a little longer and more erect on anal segment.

Chiricahuia cavicola new species.

One female, in small cave in rock cliffs of South Fork Cave Creek, Chiricahua Mts., Arizona, 5500 feet, August 4, 1917 (Townsend). Holotype, No. 21580, U. S. N. M., TD. 5130.

Length of body, 5 mm.; of wing, 4.5 mm. Lemon-yellow; the abdomen, mesoscutum, scutellum, tibiae and tarsi brown; the pleurae, antennae and palpi light rufous. Frontalia brownish-rufous. Ptilinal suture conspicuously brown. Wing veins yellow, a small slight cloud at stigma; hind crossvein conspicuously clouded, also second, third and fourth veins evenly so on apical fifth of wing. Tegulae watery-white. In some lights the abdomen and scutellum appear yellow and the mesoscutum polished black.

This strange fly appears to belong in or near the Melanophorinae, and may be parasitic in some cave-frequenting host.

The Anthomyid Genus Pogonomyia (Dip.).*

By J. M. Aldrich, U. S. Bureau of Entomology, West Lafayette, Indiana.

The genus *Pogonomyia* was established by Rondani in 1870 (Bull. Soc. Ital., ii, 336, xxiii) for a single species, *alpicola,* which was designated as type; it came from Mont Cenis in the Alps. The main characters are repeated by Van der Wulp, Biologia, Dipt., ii, 334, 1896, and by Meade, Desc. List. Br. Anth., London, 1897, p. 29. I translate the entire description from Rondani's Prodomus Dipt. Ital., vi, 37, 1877:

"Eyes bare, almost contiguous on the front in male. Front prominent. Oral margin, especially at the sides of the epistoma, with dense erect beard. Antennae short, the second segment with rather long setulae; arista nearly bare. The hind calypter a little longer than the front one. Anterior crossvein directly behind the tip of the first vein; sixth vein rather long but not reaching the margin. Front and middle femora of ordinary structure, the hind ones with a row of setae below; middle tibiae with setae behind and on outer side; hind tibiae somewhat incurved toward tip. Apex of abdomen setose but not densely villous."

Dziedzicki and Schnabl (Die Anthomyiden, 1911, 196) admit several rather divergent species, so that the genus in their conception is difficult to define; they recognize two subgenera, *Pogonomyia* and *Pogonomyiella.*

Stein, in his classic work on North American Anthomyidae (Berl. Ent. Zeitsch., xiii, 1897, 169, 170) mentioned two species found in the N. A. collections sent him. The first, from Idaho, he identified doubtfully as *alpicola,* a species with which he was not acquainted; the other he recognized only in two females and did not describe. As I furnished the Idaho material, most of it was returned to me, and I collected more specimens in the West in later years. Only a couple of years ago I sent some to Professor Bezzi, and he informed me that they were not the European *alpicola,* and sent me a pair of the latter to support his opinion. Later I found *alpicola* in Colorado.

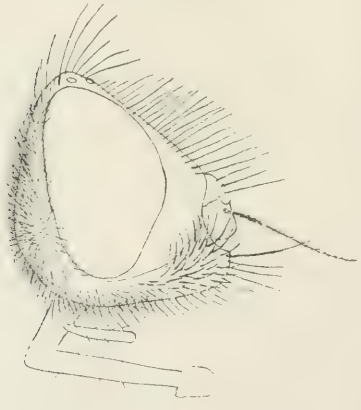
* Published by permission of the Chief of Bureau.

Van der Wulp described (*loc. cit.*) a *Pogonomyia aterrima* from northern Mexico (Ciudad Durango, 8100 feet); as his description agrees and I have the northern species from as far south as Southern California, there is no reason to question that *aterrima* is the same as the Idaho species. I redescribe it farther on.

Stein's other North American species was even more unfortunate, as he described the male in the same paper under the name *Spilogaster nitens* (p. 199); quite recently, moreover, one of the females with Stein's label "Pogonomyia n. sp." came under the eye of Mr. Malloch, and as he had the male he described the species under the name *Pogonomyia flavinervis*. This synonymy I made out from the type of *nitens* (which, by the way, is from Toronto and not Massachusetts as Stein gives it); it has been rubbed on the most accessible side of the head, and consequently does not show as many bristles on the epistoma as is characteristic of the genus, which doubtless explains the mistake.

Generic Characters. *Alpicola* shows the following characters *in both sexes*, which I consider of generic importance (see figure of head):

Entirely shining or subshining black color; epistoma strongly produced and upturned, the vibrissae above the lower edge of the head; bucca and back of head with abundant long bushy hairs; sides of epistoma with bushy hairs, some of which are directed upward; parafacial wide; front prominent, antennae short, the arista nearly bare; eyes bare; acrostichals merely hairs except the hindmost pair; calypters unequal, the hind ones rather strongly projecting behind the front ones; halteres black; scutellum bare below; dorsum of abdomen bearing rather



Pogonomyia alpicola —Head of Male.

numerous long, slender, upright bristles, irregularly arranged except a row along the hind edge of each segment; hind tibia bearing among others a row of strong bristles down the inner hind side; no costal spine; third and fourth veins almost parallel; sixth vein well developed at base, becoming evanescent and disappearing at about two-thirds the distance to the margin.

The male has a narrow front and the female has cruciate frontals; but these are less important characters than some at least of the preceding list.

Schnabl and Dziedzicki include two species with yellow halteres, one with plumose arista, one with wide front in male. We are not concerned with these at present. The four species herein treated agree very well in characters, and unquestionably belong together. The genus belongs to Phaoninae, differing from *Phaonia* mainly in the protuberant epistoma with upcurved bristles, the black halteres and the general intense black color. Most Phaonias have hairy eyes, and none of the forty species in my collection has black halteres.

Table of Species. Male and Female.

1. Parafacial as wide as the length of the third antennal joint; front tibia with 4 bristles on outer hind side in male, 3 in female....2
   Parafacial narrower than length of third antennal joint; front tibia with 2 bristles on outer hind side (rarely 3 in female)....3
2. Front of male twice as wide as distance between hind ocelli; mid basitarsus with two rows of stout spines below, which in the male are longer than the width of the joint, in the female not quite so long (Colorado).....**spinitarsis** n. sp.
   Front of male not as wide as the distance between the hind ocelli, mid basitarsus in both sexes without unusual spines (Europe, Colorado) .....**alpicola** Rondani
3. Eastern species (Ontario to Wisconsin and Illinois); parafacials surpassing the width but not equaling the length of the third antennal joint; palpi elongate; wings yellow, especially the veins; abdomen in male brownish-gray pollinose with narrow median black stripe .....**nitens** Stein
   Western species (British Columbia to Mexico and Colorado); parafacials as wide as third antennal joint; palpi usually not elongate; wings infuscated; abdomen subshining black,
   aterrima Van der Wulp

Pogonomyia aterrima V. d. Wulp.

Van der Wulp, Biologia, Dipt., ii, 334, 1896.

Stein, Berl. Ent. Zeitsch., xiii, 169, 1897 (? *alpicola*).

♂. (First see generic characters and table of species above.) Wholly black, mostly subshining. Front only slightly protuberant below, at the narrowest above about as wide as the distance between the hind ocelli; orbits silvery, very narrow; about 12 pairs of erect frontal bristles, beginning slightly below ocelli; second antennal joint with three or four long erect hairs; parafacial silvery, about as wide as third antennal joint; transverse impression extending narrowly below the eye, very distinctly set off from the shining, bushy-haired bucca, which extends forward to form the side of the protuberant epistoma; front edge of epistoma forms a sharp projecting rim; palpi of ordinary size, with a few hairs; proboscis rather slender, with ordinary labella; back of head flat above, bulging below, covered with bushy hair.

Thorax above with very thin brown pruinosity, almost shining, its hairs erect and long, not very numerous, its bristles large; post dc 3, ant dc 2, inta 2, supa 2, posta 2, hum 3, inthum 1, presut 1, npl 2; stpl 1 large behind and one more slender in front, together with several irregular slender ones. Mesopleura hairy and bristly above a diagonal line from the upper anterior to the lower posterior angle; pteropleura and metapleura bare. Scutellum with one marginal and one apical pair of bristles, the latter close together. Calypters and their fringe white.

Abdomen moderately broad and flat, the two middle segments about 2½ times as wide as long; hypopygium small, rounded, turned under, both its segments subshining, the first with rather coarse, the second with very fine hair; inner forceps (obere Zangen, D. & S.) short and blunt, the outer (untere Zangen, D. & S.,—homologous with the accessory plates of Parker's and my Sarcophagid work) shining brown, stout, not tapering, almost truncate at tip, straight, the hind edge excised to fit against the inner forceps. Fifth sternite not much developed, with a shallow excision apically.

Middle femur with a row of bristles on the whole length of the front lower edge, smaller at tip where there are some larger above them; and on apical third of front lower edge a row of about 5, beginning large and decreasing. Hind femur with an entire row of long bristles below, another on the upper front edge, and one on the hind side which dwindles toward tip. Front tibia with three setae on outer hind edge; middle tibia with about eight on outer hind side, three on inner hind side, one small or none on outer front side; hind tibia with a strong row on outer hind side, another on inner hind side, four or five on outer front side (well outwardly), and usually a few erect hairs on inner front side. Pulvilli grayish brown moderately elongated, on the front feet only.

Wings strongly blackened on front and basal portion.
Length 5.5-6 mm.

♀. Front nearly as wide as one eye, velvet black, a shining triangle in front of the ocelli; parafrontals and parafacials wider than in male; frontal bristles eight or nine, large. Middle tibia with three or four setae on outer front side, otherwise as in male; hind tibia without erect hairs on inner front side. Wings slightly and rather evenly infuscated. Length 6-7 mm.

84 specimens, of both sexes: SASKATCHEWAN: 2 Farewell Creek, August, 1907. IDAHO: 11 Moscow, April 23 to May 22; 1 Craig's Mt., June 21-25, 1894; 2 Lawyer's Canyon, June 16, 1909. CALIFORNIA: 5 Claremont (C. F. Baker). COLORADO: 61 Tennessee Pass, July 24-26, 1917.

Variations: The cruciate frontal bristles of the female are sometimes absent; some females show the palpi lengthened as in *nitens;* the pubescence of the arista is occasionally almost as long as in *nitens.*

Pogonomyia nitens Stein.

Stein, Berl. Ent. Zeitsch., xiii, 199, 1897 (*Spilogaster*).
Malloch, Bull. Ill. St. Lab. Nat. Hist., 1915, 356 (*flavinervis*).

This species differs from *aterrima* in so few characters that a full description is superfluous. The main differences have already been presented in tabular form; I should add that the palpi in *nitens* are longer and more slender than is usually the case in *aterrima.*

Ten specimens, both sexes: one female, Algonquin, Illinois, paratype of *flavinervis,* from Mr. Malloch; eight specimens, Polk County, Wisconsin, collected many years ago by Prof. C. F. Baker, which I found in the collections at Stanford University; one female, Waubamic, Ontario, June 14, 1915 (H. A. Parrish, Coll.), furnished by Professor Melander.

I have also seen several Wisconsin specimens in the collections of Professors Marshall and Wilson, in the University of Wisconsin, and Mr. Malloch recently informs me that he has a long series from Illinois; but I have never found it in Indiana. All of the recorded dates of collection are in quite early summer, and this is also true for *aterrima* if the altitude is considered.

Pogonomyia alpicola.

Rondani, Bull. Soc. Ent. Ital., ii, 337, 1870; Prod. Dipt. Ital., vi, 33, 1877 (both male only).

Pokorny, Verh. Zool.-Bot. Ges. Wien, xliii, 7, 1893 (female).

See list of generic characters already given, and also table of species. Front of male at narrowest somewhat wider than the anterior ocellus, widening rapidly toward antennae; in female about a third the head-width above, slightly more anteriorly. Parafacials silvery, parafrontals not; side of epistoma with about 20 long upcurved bristles in male only 6 or 8 shorter in female.

Thorax and abdomen black with thin brownish pruinosity, same in both sexes, and upright long hairs in male which are but little developed in female. Chaetotaxy: ps dc 3 or 4, ant dc 2, acr in female only a prescutellar pair, in male numerous tall hairs in front, those behind the suture becoming somewhat like slender bristles; hum 2 or 3, npl 2, intal 2, supal 1 and a long prealar, scutellum with 2 lateral and 1 apical, postal 2, mesopleura and sternopleura in male with abundant long hair approximating the length of bristles, no distinct separation between them and the few bristles; in the female stpl 3, mspl with a row behind and 2 or 3 in front. Calypters white with pale yellow rim and fringe.

Abdomen unstriped, fourth segment longest in female, sternites in male with long, dense hair. Mid tibia of male with 3 bristles on outer front side, 5-6 on outer hind, 6-8 on inner hind, 4-5 slender on inner front; the female has one or two less in each of these rows. Hind tibia of male with numerous rows of bristles standing in all directions except directly toward the flexor and extensor surfaces, especially a few characteristic erect, long hairs on inner and outer flexor, an incipient "villosity"; the calcar is one of a row on the inner extensor side. The female has on the hind tibia only three rows—4 in meso-extensor, 5 on latero-extensor, and 5-6 on latero-flexor. A slight spine below on hind basitarsus. Wing strongly infuscated at base, gradually less so toward apex, no costal spine.

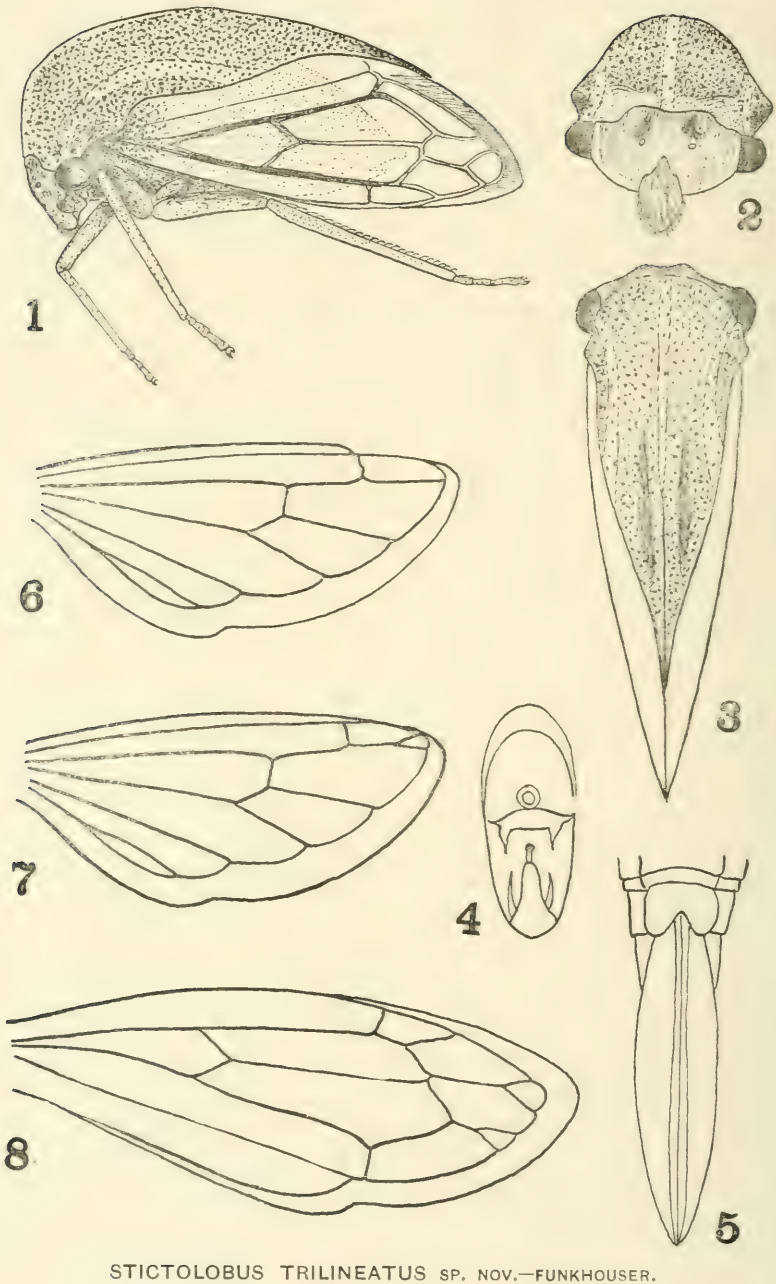
Length 6 to 7½ mm.

Two males, one female, Tennessee Pass, Colorado, July 24-26, 1917; one male, one female, Europe, from Professor Bezzi.

Pogonomyia spinitarsis n. sp.

Closely allied to *alpicola*, from which it differs by the characters given in the table and a few others. The upcurved bristles of the epistoma are only about 8 in male, 5 in female; arista with very short pubescence; palpi short.

Thorax of male not with the striking long hair of *alpicola* male,



STICTOLOBUS TRILINEATUS SP. NOV.—FUNKHOUSER.

more like the females of the two species. Tibiae in both sexes with bristles about as in *alpicola*, but with mid and hind tarsi more spiny beneath, which attains its greatest development in the mid basitarsi of the male, where there are 10-12 striking spines in each of two rows. Wings as in *alpicola*. Size the same.

One male, one female, Square-Top Mt., Grant, Geneva Park, Colorado, July 24, 1916. Altitude 11,500 feet. Collected by L. O. Jackson. Types in the Bureau of the Biological Survey, Washington, D. C. They were sent me for study by J. R. Malloch.

A New Membracid on Cypress (Homop.).

By W. D. Funkhouser, Cascadilla School, Ithaca, New York.

(Plate XI.)

Through the courtesy of Mr. H. H. Knight, of Cornell University, I have been permitted to examine a series of specimens of a very interesting species of Membracidae collected from cypress in Louisiana in the summer of 1917.

The insect has apparently not been described and is of interest not only because it is the first membracid recorded on this host but also because it proves to be another representative of the genus *Stictolobus* erected by Metcalf in 1916* to accommodate *Membracis subulata* Say.

This genus is peculiar in showing the pronotal characters of a *Cyrtolobus* and the wing structure of a *Stictocephala*. The anterior elevation of the pronotum is obtusely rounded as in *Cyrtolobus* and the general appearance of the insect suggests that genus. The forewings, however, are entirely free, as in *Stictocephala*, although there are no indications of carinate sides on the metopidium.

The series consists of thirty-seven specimens. Seven males and thirteen females were collected at Bogalousa, Louisiana, on June 15, 1917, and eleven males and six females were taken at Colyell, Louisiana, on June 16. All were found on cypress.

* Metcalf, Z. P. The Rediscovery of Membracis subulata Say, with a Description of a New Genus (Homop.). Entomological News, January, 1916, Vol. xxvii, No. 1, 1-3 pp., Pl. I.

The species is reported as being comparatively abundant in the type locality on the dates given and may be described as follows:

Stictolobus trilineatus sp. nov. (Plate XI).

Near *Stictolobus subulatus* Say but differing in color, in markings, in punctuation and slightly in wing venation.

Bright green with three longitudinal white stripes; posterior process of pronotum castaneous, tip brown; tegmina hyaline, bases slightly punctate, veins broadly marked with brown, tips fuscous; thorax and legs greenish-yellow; under surface of abdomen yellow.

Head yellow-green margined with lighter, impunctate, slightly striate; basal line adjoining prothorax much elevated in middle half; prominent swelling above each ocellus; median sulcus faint; inferior margin smooth; eyes deep brown, prominent, extending laterally beyond the humeral angles; ocelli prominent, reddish, a little nearer to each other than to the eyes and situated on a line extending through centers of eyes; clypeus long, extending as far below the inferior margin of the face as its projection above the margin, hirsute at tip.

Pronotum bright green, deeply and uniformly punctate, gradually rounded in front with no indication of carinations on sides; metopidium wider than high, smooth callosities above eyes joining in narrow line in center; humeral angles not prominent, rounded; posterior process gradually acuminate, deflexed, extending beyond tip of abdomen but not reaching apices of tegmina, sharply carinate above, bright castaneous with tip brown; semicircular impression on each side of pronotum very pronounced; median carina not percurrent, beginning at about middle of dorsal line and becoming prominent and strong posteriorly; three prominent greenish-white lines extending longitudinally on the pronotum, one on the median dorsal line beginning at base and extending to the point at about the middle of the dorsum where the median carina begins, one on each side arising just above the eye, extending over the shoulder and ending at the middle of the lateral margin, all of these lines strongly punctate.

Tegmina entirely free from pronotum, hyaline, base greenish and slightly punctate, tip fuscous in external border; middle half of radial and cubital veins broadly marked with brown, costal margin white; tip acute, middle apical cell triangular and petiolate, other apical cells varying greatly within the species; hind wings entirely hyaline, external border wrinkled, apical cell usually but not always truncate.

Sides and under surface of thorax greenish-yellow; pubescent; legs brownish-yellow, tibiae greenish, claws fuscous; abdomen yellow, under surface concolorous yellow, apical end tinged with greenish.

Sternal plate of male acute, smooth, tip brown; lateral valves incon-

spicuous; apical tergum armed with a tooth on each side below; oedeagus long, narrow, brown, very slightly swollen at tip, styles narrow and pointed.

Last ventral segment of female sharply notched in middle, rounded on either side of notch; tip of abdomen green, lightly pubescent; ovipositor brown.

Length to tip of tegmen 6.7 mm. Width between humeral angles 2.4 mm.

Type—Male. Type locality: Bogalousa, Louisiana. Female does not differ in size or markings.

Type, allotype and twenty-one paratypes in author's collection; ten paratypes in Mr. Knight's collection; four paratypes in Cornell University collection.

The wing venation in this species shows considerable variation as represented in Plate XI, Figs. 1, 6, 7 and 8. In the fore wing M3 and M4 are often separated, making six instead of the normal five apical cells (Fig. 8) and changing the shape of the cells in the apical end of the wing. In the hind wing R4+5 is usually coalesced with M1+2 (Fig. 6) to form a truncate terminal cell, but occasionally they are separated, leaving the terminal cell petiolate (Fig. 7). The forewing in no case shows the three discoidal cells as found in the wing of *Stictolobus subulatus* Say.

EXPLANATION OF PLATE XI.

Stictolobus trilineatus sp. nov.

Fig. 1. Lateral view.
Fig. 2. Frontal view.
Fig. 3. Dorsal view.
Fig. 4. Male genitalia — caudal view.
Fig. 5. Female genitalia, ventral view.
Fig. 6. Hind wing, normal venation.
Fig. 7. Hind wing, showing variation.
Fig. 8. Fore wing, showing variation.

A Review of Reviews (Lep.).

By J. McDUNNOUGH, Ph.D., Decatur, Illinois.

My paper in ENTOMOLOGICAL NEWS, xxvii, 393, has been the partial subject recently of three articles by well-known lepidopterists; two of the authors, H. G. Dyar (Ins. Insc. Menstr., v, 42) and G. Bethune-Baker (Ent. Rec., xxix, 219)

commend my method of selecting generic types but are strongly against disregarding Hübner's "Tentamen" as unpublished; the third writer, Sir George Hampson (Ent. News, xxviii, 463), finds my action in discarding the Tentamen entirely justifiable, but, as was to be expected, seriously objects to my method of fixing generic types.

These three articles serve to further emphasize the great necessity for the leading systematic entomologists in each group of insects "getting together" and trying to evolve some common method on which to base their work. Co-operation is just as vital in entomology as it is for the Allies in the present war, and the muddled synonymy and constant changes of nomenclature in the Lepidoptera can just as certainly be traced to the insistence of each systematist on "ganging his ane gait" as the allied reverses (according to military critics) are attributable to the lack of co-ordination of the several war fronts. Sir George Hampson expresses the hope that one of the minor benefits of the war may be to bring us back to a simple binominal nomenclature; I should like to express the hope that entomologists will be taught by the war the necessity of co-operation and the value of discarding possibly one of one's own pet theories for the sake of the general good.

With regard to Hübner's "Tentamen" I have already expressed the hope that some definite action concerning this work may soon be taken; my own reason for rejecting it at the time of issuing my list of Noctuid types and later in our "Check List" was not because I regarded the generic names as *nomina nuda* but because there is no evidence in the pamphlet itself, such as place or date of publication, to show that it was anything more than a sample sheet prepared for Hübner's own use and of which possibly one or two copies fell at a later date into the hands of co-workers for some reason or other; personally I should just as soon accept the names therein proposed as not, but with half the systematists clamoring for its rejection and the other half just as loudly insisting on its retention the only certainty is that, whichever course is followed, is going to cause adverse criticism.

A few of the remarks in the critical articles above men-

tioned call for a rejoinder by myself. Dr. Dyar's review, consisting as it does largely of personal items, may be advantageously disregarded. Mr. Bethune-Baker comments on the arrangement of Aegeriidae in our "Check List"; in this we followed, more or less blindly, Mr. A. Busck's Synoptic Tables of the group published in 1909 (Proc. Wash. Ent. Soc., xi. 115) and must refer him to Mr. Busck personally for further details. Sir George Hampson charges that the type of the genus *Phytometra* Haw. cannot possibly be *aenea* as specified by Westwood, since it was based on larval characters, the only two larvae known to Haworth being those of *festucae* and *gamma;* he would therefore place the genus as prior to *Autographa;* I must confess that Haworth's "Lepidoptera Britannica" is entirely unknown to me and I doubt if a copy exists in this country; if so, I have been unable to find it. This being the case, I cannot comment on Hampson's remarks but would note that he certainly raises a delicate point which may call for a special ruling by the committee on International Nomenclature. With regard to Hampson's non-acceptance of Ochsenheimer's generic names published in 1816 as *nomina nuda* I quote Article 79 of Banks and Caudell's Entomological Code which says that "A generic name becomes valid when published in connection with or with reference to a valid (= described or figured) specific name or to replace a valid generic name." The first portion of this article clearly covers Ochsenheimer's generic names which were published in connection with several valid specific names; I believe that the general entomological usage in this country upholds me in regarding them as valid and I must refuse to accept Hampson's reference of them to Treitschke (1825).

With regard to Hampson's remarks on the dates of Hübner's "Verzeichniss" I should like to point out that he has overlooked several important points in this connection. In the first place I would refer him to a pamphlet published in 1905 by Prof. C. H. Fernald, of Amherst, Massachusetts, on the dates of Hübner's "Sammlung Eur. Schmett."; in this pamphlet are reprinted several of Hübner's *dated* prospectuses,

advertising his works for sale, which were found in the copy of Hübner's "Sammlung" in the Royal Library at Berlin; Prospectus IV, dated Augsburg, 6th April, 1809, contains a reference to "Beitraege zur Sammlung Ex. Schmett.," stating that *two* plates were completed and *for sale* at 36 kr. a plate; obviously from this the "Beitraege" or "Zutraege," as they were later called, were commenced at a much earlier date than that of the title-page to the first century (December 22, 1818) and it seems probable that this date indicates the *completion* rather than the *commencement* of the century, especially as Prospectus V, dated 22nd December, 1823, announces two complete centuries of the "Zutraege," as it is now called, for 43 fl. 24 kr., and the date on the preface of the second century is 1822. Accepting this evidence as conclusive, Hampson's remarks concerning the incorrectness of Sherborn & Prout's fixation of the dates of the early pages of the "Verzeichniss" as 1816 and 1818 are fallacious: the text of the "Verzeichniss" preface distinctly shows that it was written prior to the remainder of the work and it is just as distinctly dated Augsburg, 21st September, 1816; the fact that he refers by number in the "Verzeichniss" to certain plates of the "Zutraege" shows that these plates were issued prior to 1816 or 1818, as the case may be. Instead therefore of dating all the plates of the first century of the "Zutraege" 1818 we must use the dates 1809-1818 and for the second century 1818-1822, the reference to *Lycus niphon* (Zutr. 203, 204) on page 74 of the "Verzeichniss," clearly showing (if we accept Sherborn's "Verzeichniss" dates) that the first plate of the second century was ready late in 1818; up to page 160 of the "Verzeichniss" the latest reference to the "Zutraege" I have found is on page 149 to figures 213-4 which at least would make 1820 the latest date possible for the first three plates of the second century.

In the first 16 pages of the "Verzeichniss," for which the date 1816 is claimed, the latest reference to the "Zutraege" is *Sicyonia apseudes* Hbn. (Zutr. 141, 142); 25 out of the 35 plates of the first century were therefore published prior to September, 1816, the first two plates being prior to April, 1809;

for American Lepidopterists this is important, a number of North American species having been figured on the early plates. I utterly fail to agree with Hampson that the whole of the "Verzeichniss" should be credited to 1827 simply because he has found no previous reference in the contemporaneous literature; Hübner's method of distributing his work in small portions has been too fully commented on by Herrich-Schaeffer (Corr. Bl. Zool. min. Ver. Regens., 1869, p. 209) and others to permit of the doubt that the parts were not distributed as they appeared from the press but were held over until the completion of the volume. Until therefore some much more conclusive contrary evidence is given, I believe the dates given by Sherborn and Prout (1912, Ann. Mag. Nat. Hist. (8), ix, 179-180) should be accepted as correct.

In conclusion I should like to state my conviction that the generic names proposed in the "Zutraege" are perfectly valid; they are proposed in connection with a specific name of which a perfectly identifiable figure is given and in most instances are definitely monobasic; in my opinion they should certainly take priority over the same names often used at a later date in the "Verzeichniss."

Mosquitoes and the War.

Freeing the Hog Island shipbuilding zone of disease-breeding mosquitoes was decided upon at a meeting of the State war board in Harrisburg yesterday. The work will be done under the direction of the State Department of Health with experts who aided Surgeon General William C. Gorgas in cleaning up the Panama Canal zone.

It will be the biggest fight against mosquitoes ever undertaken in Pennsylvania. The State war board has in charge the $2,000,000 war defense appropriation. It decided to contribute $75,000 to the $210,000 fund being raised to wipe out the pests. The State Health Department will put $25,000 into this project, the city of Philadelphia $50,000, the Emergency Fleet Corporation $50,000 and the Westinghouse Electric Company $10,000.

The appropriation was made following conferences arranged by acting Commissioner of Health Rover and the engineers of the Federal Government, Pennsylvania, New Jersey and this city relative to the elimination of the mosquitoes, which if allowed to breed would stop the night shifts working on the Federal ships and cut the efficiency of the plant down by half.

The money will be expended in a drainage and pumping station. Two wells will be dug and two pumping stations erected and the swamp water treated with oil to kill the larvae.

—*Public Ledger*, Philadelphia, April 18, 1918.

ENTOMOLOGICAL NEWS.

PHILADELPHIA, PA., MAY, 1918.

The Forms of Generic and of Specific Names.

In view of the forms of generic and specific names in articles recently submitted for publication in the NEWS and in other entomological journals, it seems necessary to call the attention of authors and others to the rules of zoological nomenclature governing these forms. The examples are of our own selection.

Of the International Rules of Zoological Nomenclature (Proceedings, Ninth International Zoological Congress, Monaco, 1913), Article 8 reads: "A generic name must consist of a single word, simple or compound, written with an initial capital letter, and employed as a substantive in the nominative singular."

Example: *Johannsenia,* NOT *Johannseni.*

Article 14 of the International Rules reads: "Specific names are:

a. Adjectives which must agree grammatically with the generic name."

Example: *Lopidea minima,* NOT *minimus; Pogonomyia spinitarsis,* NOT *spinitarsus; Johannsenia aurea,* NOT *aurei.*

"*b.* Substantives in the nominative in apposition with the generic name."

Example: *Lopidea navajo. L. arizona* is, perhaps, admissable, but *L. arizonae* is better (see Article 16 quoted below).

"*c.* Substantives in the genitive."

Example: *Lopidea garryae* (because found breeding on the plant *Garrya wrightii*).

"If the name is given as a dedication to one or several persons, the genitive is formed in accordance with the rules of Latin declination in case the name was employed and declined

in Latin. If the name is a modern patronymic, the genitive is always formed by adding, to the exact and complete name, an *i* if the person is a man, or an *ae* if the person is a woman, even if the name has a Latin form; it is placed in the plural if the dedication involves several persons of the same name."

Examples: *Elcodes nunenmacheri, Cydimon poeyi.*

"*Recommendation.* The best specific name is a Latin adjective, short, euphonic, and of easy pronunciation. Latinized Greek words or barbarous words may, however, be used."

Examples: *Panurginus planatus, Tetragoneuria cynosura.*

Article 16: "Geographic names are to be given as substantives in the genitive, or are to be placed in an adjectival form."

Examples: *Halictoides novaeangliae, Pleurotropis kansensis.*

Article 20: "*Recommendations.* The prefixes *sub* and *pseudo* should be used only with adjectives and substantives, *sub* with Latin words, *pseudo* with Greek words, and they should not be used in combination with proper names. The terminations *oides* and *ides* should be used in combination only with Greek or Latin substantives; they should not be used with proper names."

Examples: *Nemoria subcroceata, Lycaena pseudargiolus, Sphaeridium scarabaeoides. Pseudamericana* and *pseudimitans* are bad.

Additional Acarina Found in New Jersey.

To the lists of New Jersey mites published in the "Entomological News," vol. 26, p. 149 and vol. 27, p. 109, can be added the following:

Trombidium sericeum Say. "Pine Barrens" of New Jersey. The "red bug."

Eriophyes nyssae Trott. Lakehurst, August 18. Galls on leaves of sour gum. (Dickerson & Weiss).

Eriophyes buxi. Rutherford. On boxwood.

Eriophyes sp. Kingston, August 22. On flowering currant. (Dickerson & Weiss).

Eriophyes sp. or disease. Lakehurst, August 18. Witch's broom on oak. (Dickerson & Weiss).

Eriophyes sp. or disease. Lakehurst, August 18. Witch's broom on *Rhus copallina.* (Dickerson & Weiss).—Harry B. Weiss, New Brunswick, N. J.

Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

The records of papers containing new species are all grouped at the end of each Order of which they treat. Unless mentioned in the title, the number of the new species occurring north of Mexico is given at end of title, within brackets.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

2—Transactions, American Entomological Society, Philadelphia. **3**—The American Naturalist. **4**—The Canadian Entomologist. **5**—Psyche. **9**—The Entomologist, London. **11**—Annals and Magazine of Natural History, 9th series, London. **18**—Ottawa Naturalist. **37**—Le Naturaliste Canadien, Quebec **67**—Entomologiske Tidskrift, Stockholm. **69**—Bolletino, Societa Italiana Entomologica. **68**—Science, New York. **73**—Archives, Zoologie Experimentale et Generale, Paris. **121**—Archives des Sciences Physiques et Naturelles, Geneva. **128**—Proceedings, Linnean Society of New South Wales, Sydney. **141**—Proceedings, Indiana Academy of Sciences, Indianapolis. **142**—Report, Michigan Academy of Sciences, Lansing. **153**—Bulletin, American Museum of Natural History, New York. **184**—Journal of Experimental Zoology, Philadelphia. **195**—Bulletin, Museum of Comparative Zoology, Cambridge. **223**—Broteria, Revista de Sciencias Naturaes do Collegio de S. Fiel. (Ser. Zoologica). **238**—Anales, Sociedad Cientifica Argentina, Buenos Aires. **259**—Publication, Carnegie Institution of Washington. **313**—Bulletin of Entomological Research, London. **322**—Journal of Morphology, Philadelphia. **324**—Journal of Animal Behavior, Cambridge. **344**—U. S. Department of Agriculture, Washington, D. C. **405**—University of Toronto Studies, Biological Series. **407**—Journal of Genetics, Cambridge, England. **447**—Journal of Agricultural Research, Washington. **491**—Transactions, American Microscopical Society, Decatur, Illinois. **509**—Revue Generale des Sciences pures et Appliquees, Paris. **532**—Proceedings, National Academy of Sciences of the United States of America, Washington. **540**—The Lepidopterist, Salem, Mass. **558**—Journal, Straits Branch Royal Asiatic Society.

GENERAL SUBJECT. Cockerell, T. D. A.—Invertebrate paleontology, **68**, xlvii, 319-20. **Crampton, G. C.**—A phylogenetic study of the terga and wing bases in Embiids, Plecoptera, Dermaptera and Coleoptera, **5**, xxv, 4-12. **Fagan, M. M.**—The uses of insect

galls, **3,** lii, 155-76. **Lameere, A.**—La vie des insectes aux temps primaires, **509,** xxix, 5-13. **McMurrich, J. P.**—Provancher chez nos compatriotes de langue anglaise, **37,** xliv, 131-35. **Moore & Graham**—Toxicity of volatile organic compounds to insect eggs, **447,** xii, 579-87. **Provancher, L.**—Notes biographiques, **37,** xliv, 136-41. **Sheldon, W. G.**—Formaldehyde for fixing the wings of entomological specimens, **9,** 1918, 68-9. **Tavares, J. S.**—Cecidologia Brazileira, **223,** xvi, 21-48. **Tullgren, A.**—En enkal apparat for automatiskt vittjande av sallgods, **67,** xxxviii, 97-100. **Turner, C. H.**—Literature for 1916 on the behavior of spiders and insects other than ants, **324,** vii, 405-19. **Wells, M. M.**—Literature for 1916 on ants and myrmecophils, **324,** vii, 420-43.

PHYSIOLOGY AND EMBRYOLOGY. Hagan, H. R.—Observations on the embryonic development of the mantid Paratenodera sinensis, **322,** xxx, 223-44. **McEwen, R. S.**—The reactions to light and to gravity in Drosophila and its mutants, **184,** xxv, 49-105. **Nakahara, W.**—Studies of Amitosis: its physiological relations in the adipose cells of insects...., **322,** xxx, 483-526. **Payne, F.**—The effect of artificial selection on bristle number in Drosophila ampelophila and its interpretation, **532,** lv, 55-8. **Thompson, C. B.**—Origin of the castes of the common termite, Leucotermes flavipes, **322,** xxx, 83-155.

MEDICAL. MacGregor, M. E.—Insects as carriers of disease, **491,** xxxvii, 1-17.

ARACHNIDA, ETC. Criddle, N.—Some habits of two burrowing spiders in Manitoba, **18,** xxxi, 104-7. **Hansen, H. J.**—On the trichobothria (auditory hairs) in Arachnida, Myriopoda and Insecta, with a summary of the external sensory organs in Arachnida, **67,** xxxviii, 240-59.

NEUROPTERA, ETC. Banks, N.—New neuropteroid insects [many new], **195,** lxii, 22 pp. **Brocher, F.**—(See under Coleoptera.) **Clemens, W. A.**—An ecological study of the mayfly, Chirotenetes, **405,** No. 17, 43 pp. **Horton, J. R.**—The citrus thrips, **344,** Bul. No. 616. **Tillyard, R. J.**—On the morphology of the caudal gills of the larvae of zygopterid dragonflies, **128,** xlii, 31-112 (cont.).

ORTHOPTERA. Glaser & Wilcox—On the occurrence of a mermis epidemic amongst grasshoppers, **5,** xxv, 12-15.

HEMIPTERA. Gibson & Holdridge—The genus Narnia and a key to the genera of Anisoscelini, **5,** xxv, 1-4. **Ferris, G. F.**—A note on the occurrence of abdominal spiracles in the coccidae, **4,** 1918, 85-8. **Richardson, C. H.**—The pulsatile vessels in the legs of Aphididae, **5,** xxv, 15-17.

Gibson, E. H.—The genus Corythucha (Tingidae) [21 new], **2,** xliv, 69-104. The genus Hadronema (Miridae) [2 n. sps.], **4,** 1918,

81-4. **Gillette, C. P.**—Aphis saliceti, Siphocoryne pastinacea and allied species [2 n. sps.], **4,** 1918, 89-94. **Swain, A. F.**—[Nine] new Aphididae from California, **2,** xliv, 1-22.

LEPIDOPTERA. Barnes & McDunnough—Life histories of N. American species of the genus Catocala, **153,** xxxviii, 147-77. **Beutenmiller, W.**—Notes on the larvae of Catocala and their habits, **540,** ii, 17-20. **Hawkes, O. A. M.**—Studies in inheritance in the hybrid Philosamia (Attacus) ricini x P. cynthia, **407,** vii, 135-52. **Ljungdahl, D.**—Etwas uber die oberflachen-skulptur einiger schmetterlings-puppen, **67,** xxxviii, 217-28. **Pictet, A.**—Influence de la pression atmospherique sur le developpement des L., **121,** xliv, 413-54. **Tillyard, R. J.**—The wing-venation of L. (Preliminary report), **128,** xlii, 167-74.

Ellsworth, A.—Three new forms, **540,** ii, 21-2.

DIPTERA. Ball, S. C.—Migration of insects to Rebecca shoal light station and the Tortugas Islands, with special reference to mosquitoes and flies, **259,** No. 252, 195-212. **Bergman, A. M.**—Om renens oestrider, **67,** xxviii, 1-32, 113-46. **Cresson, E. T., Jr.**—Costa Rican Diptera, III—Ephydridae, **2,** xliv, 39-68. **Felt, E. P.**—Notes and descriptions of Itonididae in the collection of the Am. Mus. N. H., **153,** xxxviii, 179-82. **Tetley, H.**—The structure of the mouth-parts of Pangonia longirostris in relation to the probable feeding-habits of the species, **313,** viii, 253-68.

Malloch, J. R.—A partial key to species of the genus Agromyza [3 n. sps.]; Supplementary note on the anthomyid genus Phyllogaster, **4,** 1918, 76-80; 81.

COLEOPTERA. Brocher, F.—Etude experimentale sur le fonctionnement du vaisseau dorsal et sur la circulation du sang chez les insectes. I. Le Dyticus marginalis. II. Les larves des Odonates, Nouvelles observations sur la respiration des Dyticides, **73,** lvi, 1-24; 247-58; 445-90. **Champion, G. C.**—The C. of the Falkland Islands, **11,** i, 167-86. **Goldsmith, W. M.**—Field notes on the distribution and life habits of the tiger beetles of Indiana, **141,** 1916, 447-55. **Grave, B. H.**—Zeugophora scutellaris, **322,** xxx, 245-61. **Marshall, G. A. K.**—A new weevil pest of sweet potatoes in Jamaica, **313,** viii, 269-72.

Leng & Mutchler—Insects of Florida, V.—The water beetles [2 n. sps.], **153,** xxxviii, 73-116.

HYMENOPTERA. Bruch, C.—Costumbres y nidos de hormigas, **238,** xxxiv, 154-68. **Burkill, I. H.**—A note upon the way in which bees settle on flowers of Derris thyrsiflora, and the injury resulting upon their search for honey, **558,** 1917, 263-4. **Cockerell, T. D. A.**—Neotropical bees, principally collected in Argentina, **2,** xliv, 25-38. **Santschi, F.**—Description de quelques nouvelles

fourmis, **238,** lxxxiv, 276-83. **Wheeler, W. M.**—A list of Indiana ants, **141,** 1916, 460-6.

Cockerell, T. D. A.—Descriptions and records of bees.—LXXIX [2 new], **11,** i, 158-67.

A Study of the Japanese Lasiocampidae and Drepanidae. By Kikujiro Nagano. Bulletin No. 2 of the Nawa Entomological Laboratory, Gifu, Japan, December, 1917.—This important contribution is in English and Japanese. There are ten plates; five delineate the species and larvae in color and the others show anatomical details. A number of new genera and species are described. Valuable features of the work are the descriptions of the larvae, the life histories and distribution. The excellent colored plates are the work of the author. —H. S.

Doings of Societies.

American Entomological Society.

Meeting of December 10, 1917, in the hall of The Academy of Natural Sciences of Philadelphia; eight persons present, the President, Dr. Henry Skinner, in the chair. Donations to the collections of the Academy of 135 specimens of 37 species of *Corythucha* from Mr. E. H. Gibson, and 5 myriopods, 11 insects from the Belgian Congo from Mr. Morgan Hebard were reported.

The following were elected to serve as officers and on standing committees for the year 1918: *President,* Henry Skinner; *Vice-President,* J. A. G. Rehn; *Corresponding Secretary,* Morgan Hebard; *Recording Secretary,* R. C. Williams, Jr.; *Treasurer,* E. T. Cresson; *Publication Committee,* J. A. G. Rehn, E. T. Cresson and P. P. Calvert; *Finance Committee,* J. A. G. Rehn, D. M. Castle and Morgan Hebard; *Property Committee,* E. T. Cresson, Jr., Morgan Hebard and Philip Laurent.

Meeting of February 28, 1918, in the same place; eleven persons present; Dr. Henry Skinner, President, in the chair.

A communication was read from Dr. Ann H. Morgan, of Mount Holyoke College, South Hadley, Mass., announcing the loss of their library and collections by fire, and soliciting material and literature. Mr. Rehn moved that the requirements of the College be ascertained through Dr. Morgan, with a view to assisting them with pamphlets and material. This motion was carried.

The following motion was ordered spread on the minutes:

"The American Entomological Society hears with regret of the death of Dr. Samuel Gibson Dixon, President of The Academy of Natural Sciences of Philadelphia, on February 26, 1918."

Diptera.—Mr. Hornig reported that the first flies of the season, presumably *Musca domestica,* emerged February 27th.

annual loss of wheat exceeding in value one million dollars. It is spreading over the entire southeastern wheat region. It winters as larvae in grain in granaries and barns; constructs cocoon within grain, and starts to transform to pupae in May. May 10-20 large number of pupae found. First generation emerges in late May and early June coincident with the heading of the wheat. Females deposit their eggs under the glumes which protect the green wheat. Number of eggs per female ranges from 36 to 148, with an average of 92. Most of the eggs are deposited the first and second days after mating. Hatching occurs in 7 to 9 days. Young larvae gnaw their way into the green wheat and feed on the milky contents. Life cycle requires 40 to 50 days, and in some instances longer. A second generation occurs at harvest time, and this for the most part emerges after the wheat has been carried into the barns. This leads to the development of three more broods, so that in all there are five broods of moths each year, and there is evidence that we have as many as six broods, as moths were found in the barns as late as mid-December. The great destruction of wheat by this insect is done while the unthreshed wheat remains in the mow.

Mr. Daecke exhibited pitch nodules of *Evetria virginiana* Busck and *E. comstockiana* Fernald, stating that those of the latter are always found on one year old shoots, while those of the former are on two to five year old branchlets. This led to the observation that it takes *virginiana* two years to mature. He exhibited also the small thin-walled nodules of *virginiana* at the end of their first year and at the time when the two year-old insects are emerging.

Diptera. The larvae and pupae from pig manure exhibited by Mr. Hornig at the December meeting have emerged and prove to be *Chrysomyza demandata* Fabr.

Coleoptera. Mr. Hornig exhibited a bottle containing milk tablets which has been in a desk since 1912. Upon examination this was found to contain live *Anthrenus* larvae. Prof Sanders said there is a record of *Trogoderma* larvae living five years without food.

Mr. J. W. Green exhibited the *Ligyrus* mentioned at the January meeting and a Florida specimen from Dr. Castle's collection, the genitalia of which agree with his specimen. Sketches of the genitalia were also shown proving that *gibbosus* DeG. and *neglectus* LeC. are distinct.

Mr. H. W. Wenzel exhibited four pairs of *Clerus lactus* Klug (*abruptus* LeC.) which superficially appear to be four different species. Those from Boulder, Colorado, were light; from Southeastern Oregon had dark elytra; from Round Mt., Texas, had dark elytra and thorax, while the Chisos Mts., Texas, form had dark elytra and thorax but were much larger.—Geo. M. Greene, *Sec'y*.

EXCHANGES.

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted for cash or exchange.—Buprestidae and Cerambycidae new to my collection.—J. N. Knull, Hummelstown, Pa.

Duplicate Rhopalocera from Japan and Formosa. Desiderata—Those from the world.—S. Satake, No. 48 Aoyamaminamimachi 5 chome Tokyo, Japan.

Cicindelidae Wanted—I wish to obtain for purposes of study, Cicindelas, "tiger beetles," from the Southern and Gulf States. Correspondence desired.—Edwin E. Calder, Longmeadow, R. I.

Wanted—North American Coleoptera for exchange. Please send lists to V. Harnach, 1759 W. 20th St., Chicago, Illinois.

South American Erycinidae and Lycaenidae are offered in exchange for North American moths (Noctuids, Geometers, etc.).—G. Chagnon, P. O. Box 521, Montreal, Canada.

Wanted—Monog. des Buprestides—Kerremans, Vol. II, Pt. 1; Bibliog. Econ. Ent., Pt. IV; Mo. Bul. Cal. Com. Hort., Vol. I, No. 9, and Vol. II, Nos. 3 and 4.—E. A. Klages, Crafton, Pa.

Wanted—Friendly correspondence and exchange of Lepidoptera. Send your address and offerta. Will reply promptly.—F. E. Potter, 267 So. Main St., New Britain, Conn.

For Exchange—A few specimens, mostly Sphingidae and Saturniidae common to this region, for species from some other part of the country.—Dr. Elmer T. Learned, Fall River, Mass.

Lepidoptera—I have for exchange first class specimens of *Papilio floridensis, palamedes, Pholus fasciatus, tersa, hylaes, undulosa, Apatela tritona, Leucania pilipalpis, extincta, subpunctata, Gortyna u-album, Syneda graphica,* and hundreds of others from Pa. and Fla Send lists, or address F. W. Friday, 82 Jacob St., Fair Haven, Pittsburgh, Pa.

Catocalae—For exchange perfect specimens of *C. pura, C. aspasia* and var. *sara, C. faustina* var. *lydia, C. praeclara.* Desire other *Catocalae.* Some of the common species wanted.—John H. West, 2057 E. York St., Phila., Pa.

Wanted to Exchange—I wish to exchange Rhopalocera from eastern United States for those of the western and southern part. Correspondence desired. Paul N. Musgrave, Pennsboro, W. Va.

Wanted in series for cash or exchange beetles of the genus *Serica* (Scarabaeidae) from all parts of North America. *Cicindela lincolniana* Casey among the exchanges offered. R. W. Dawson, Department of Entomology, University Farm, Lincoln, Nebraska.

Prof. Dr. Carlos E. Porter, Directeur des "Anales de Zoologia Aplicada," Casilla 2974, Santiago, Chile, is anxious to secure systematic papers on entomology, especially on the Thysanoptera, Coccidae, Aleyrodidae, Acarina, Chalcididae, Agromyzidae, Syrphidae and Longicornia. He will be glad to exchange specimens and publications.

Change of Address.—E. G. Titus from Logan, Utah, to Box 453, Idaho Falls, Idaho.

Wanted for Cash.—Lowest insects of all families, preserved in fluid, for phylogenetic study. G. C. Crampton, Amherst, Mass.

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